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DD/S 68-4/401

26 AUG 1968

MEMORANDUM FOR: Deputy Director for Support

SUBJECT : Chain Bridge Traffic

REFERENCE : Memo dtd 29 Jul 68 to DDS fr D/L, same subject

1. This memorandum is for information only.

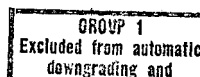
2. The referenced memorandum supported a conclusion that Agency efforts to persuade the Virginia Department of Highways to take specific, immediate action to correct Chain Bridge traffic congestion be discontinued. In the reference, it was stated that none of the examined, feasible solutions were cost-effective (with the exception of closing Glebe Road to through, Virginia-bound traffic, which was unacceptable to the Virginia Department of Highways). Inasmuch as a proposal to remove the corner abutting the intersection and Route 123 was originated in February 1967 and has been intermittently pursued since that date, clarification of the cost-effectiveness of this proposal is warranted.

3. Figure 1 (Attachment 1) is a plan view of the existing Glebe Road/Chain Bridge Road intersection with arrows indicating directional traffic flow during the morning rush hour period of 0730 to 0900. Extensive traffic surveys have been conducted by both the Virginia Department of Highways and the Office of Logistics and pertinent statistics and traffic light frequencies are shown in Table 1 (Attachment 2). An analysis of the ratios of the District of Columbia-bound traffic to Virginia-bound traffic verifies conclusively that the existing lane utilization and traffic light frequencies are fully justified. Any reassignment of existing lanes or adjustment of signal frequency to benefit Virginia-bound traffic can only be made to the detriment of the significantly greater volume of the District of Columbia-bound traffic.

4. As shown by the "blocking vehicle" drawn in Figure 1, Virginia-bound traffic via Chain Bridge Road is unable to take advantage of the continuous right-turn green light because of one or more vehicles waiting to proceed to Glebe Road. As shown in Figure 2 (Attachment 3), removal of the corner abutting the intersection and Chain Bridge Road would permit assignment of a "holding lane" for through

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traffic and enable right turn (Chain Bridge Road) traffic to proceed until the holding lane filled to capacity. Because of the proximity of Chain Bridge, the maximum capacity of the holding lane that can be created by removal of the corner is eight vehicles. It can be readily seen from Figure 2 that, if nine or more vehicles were in the holding lane, Chain Bridge Road traffic would be denied access to the right turn lane, thereby recreating the existing traffic stoppage at the bridge abutment where no practicable solution is available. In order for the holding lane to function effectively, the flow of Glebe Road traffic through the intersection during the green light phase must exceed the arrival rate of Glebe Road traffic at the intersection throughout the light cycle. If, for example, Glebe Road vehicles arrive at the intersection at a rate of five cars per minute and only five cars are able to proceed through the intersection during the 22-second green light, within 6 minutes the holding lane would be completely useless.

5. The number of vehicles able to proceed to Glebe Road via Chain Bridge is seriously hampered by both the short traffic signal duration and by interdiction from the intra-Virginia traffic moving simultaneously from Glebe Road to Chain Bridge Road. The arrival rate of Virginia-bound Glebe Road traffic is already marginally close to the holding lane limit; accordingly, creation of a limited-length holding lane is considered a partial solution. Further, any moderate increase in Glebe Road traffic, whether caused by future population increases or by immediate driver choice of Chain Bridge as an alternate route (considered most likely if the traffic backup were to be significantly reduced), would exceed the intersection capacity and completely negate the effectiveness of the holding lane. For this reason, removal of the intersection corner is held to be a temporary solution. Inasmuch as the estimated cost for a partial, temporary improvement is in excess of \$100,000, the proposal is not considered cost-effective. Project correspondence indicates that this view is shared by the Virginia Department of Highways, and substantial resistance of initiation of construction may be anticipated.

6. Additional mitigating factors are:

a. Assuming Virginia Department of Highways' acceptance of the project, it is probable that appropriation or reapportioning of highway funds would be a lengthy process.

b. Actual construction is estimated to require as much as 1 year because of the extreme limitations of traffic maintenance during rush hour and during periods of required dynamiting.

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c. Construction activities (protective barriers, temporary paving, etc.) are certain to disrupt rush hour traffic patterns causing delays well in excess of those currently experienced.

7. Although the Office of Logistics is unable to recommend a solution to the Chain Bridge traffic congestion that is acceptable to the Virginia Department of Highways at this time, changed conditions at a later date may make one or more of the currently considered proposals feasible. To this end, it is proposed that the Office of Logistics maintain a continuing liaison with the Virginia Department of Highways in order to promote frequent consideration of present and future Agency traffic problems.

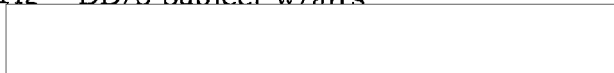


George H. Mealon
Director of Logistics

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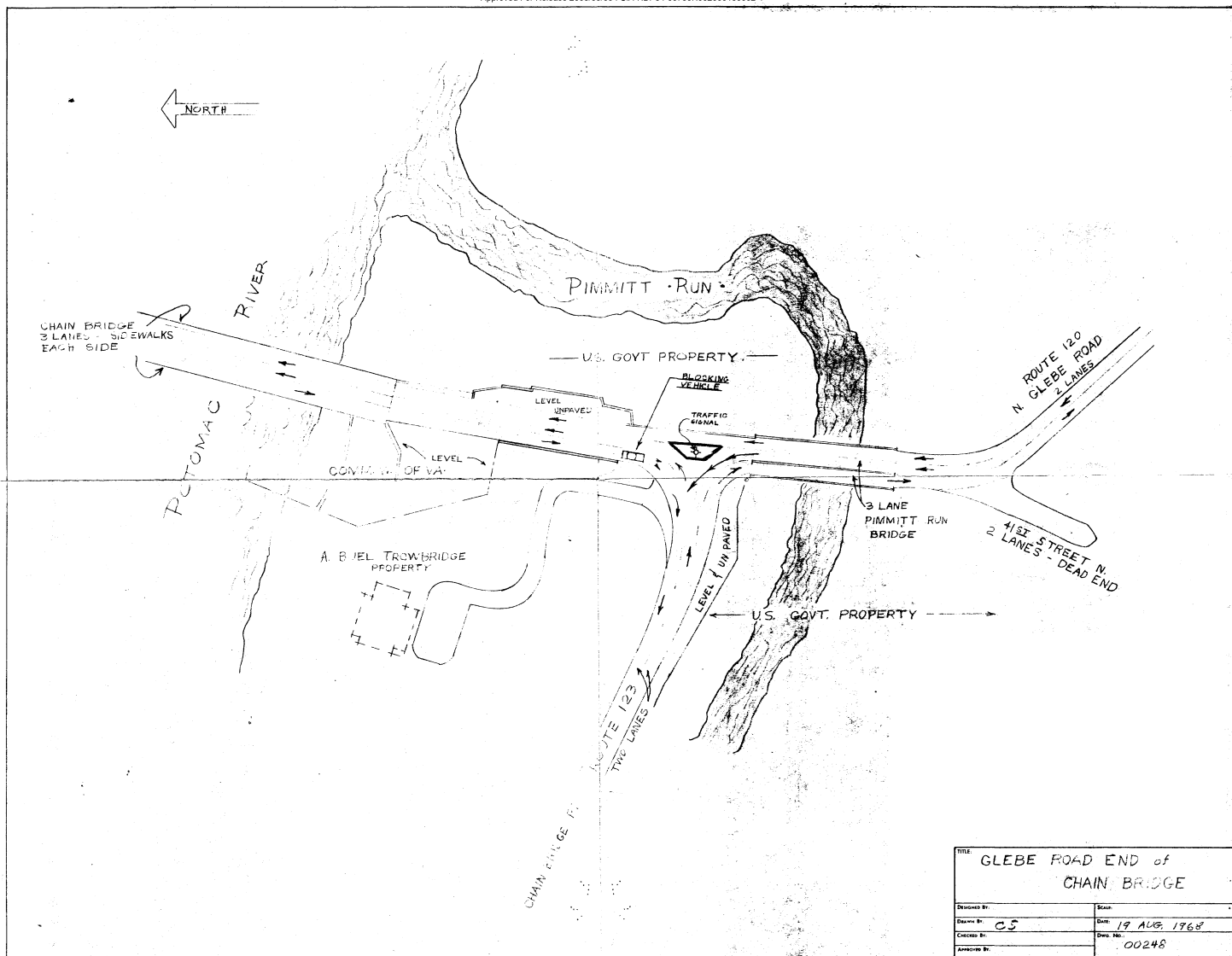


Figure 1 (Am.)

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TABLE 1

Glebe Road/Chain Bridge Road Intersection Traffic Volume
and Traffic Light Frequencies 0730 - 0900

I. Typical traffic volumes 0730 - 0900 (Based on Office of Logistics survey of 25 and 26 October 1967)

A. District of Columbia-bound via Glebe Road and Chain Bridge Road	3,551
B. Virginia-bound via Chain Bridge Road	389
C. Virginia-bound via Glebe Road	197
D. Intra-Virginia, Glebe Road to Chain Bridge Road	235

II. Overall traffic ratios

A. 0730 - 0900

1. District of Columbia-bound to Virginia-bound	6 to 1
2. Virginia-bound via Chain Bridge Road to Virginia-bound via Glebe Road	2 to 1
3. Intra-Virginia to Virginia-bound via Glebe Road	1 to 1

B. 0745 - 0815 (rush hour peak)

1. District of Columbia-bound to Virginia-bound	7 to 1
2. Virginia-bound via Chain Bridge Road to Virginia-bound via Glebe Road	2.5 to 1
3. Intra-Virginia to Virginia-bound via Glebe Road	1.5 to 1

III. Traffic light frequencies (95-second cycle)

- | | | |
|---|-------|------------|
| A. District of Columbia-bound via Glebe Road - continuous green | | |
| B. District of Columbia-bound via Chain Bridge Road - green 65 seconds | | |
| | amber | 5 seconds |
| | red | 25 seconds |
| C. Virginia-bound via Chain Bridge Road - continuous green | | |
| D. Virginia-bound via Glebe Road - green 22 seconds | | |
| | amber | 3 seconds |
| | red | 70 seconds |
| E. Intra-Virginia; Glebe Road to Chain Bridge Road - green 25 seconds | | |
| | red | 70 seconds |

IV. Mean number of Virginia-bound vehicles per traffic light cycle (95 seconds)

Via Glebe Road (22-second green)	3
Via Chain Bridge Road	<u>8</u>
Mean total	11
Glebe Road to Chain Bridge Road	4

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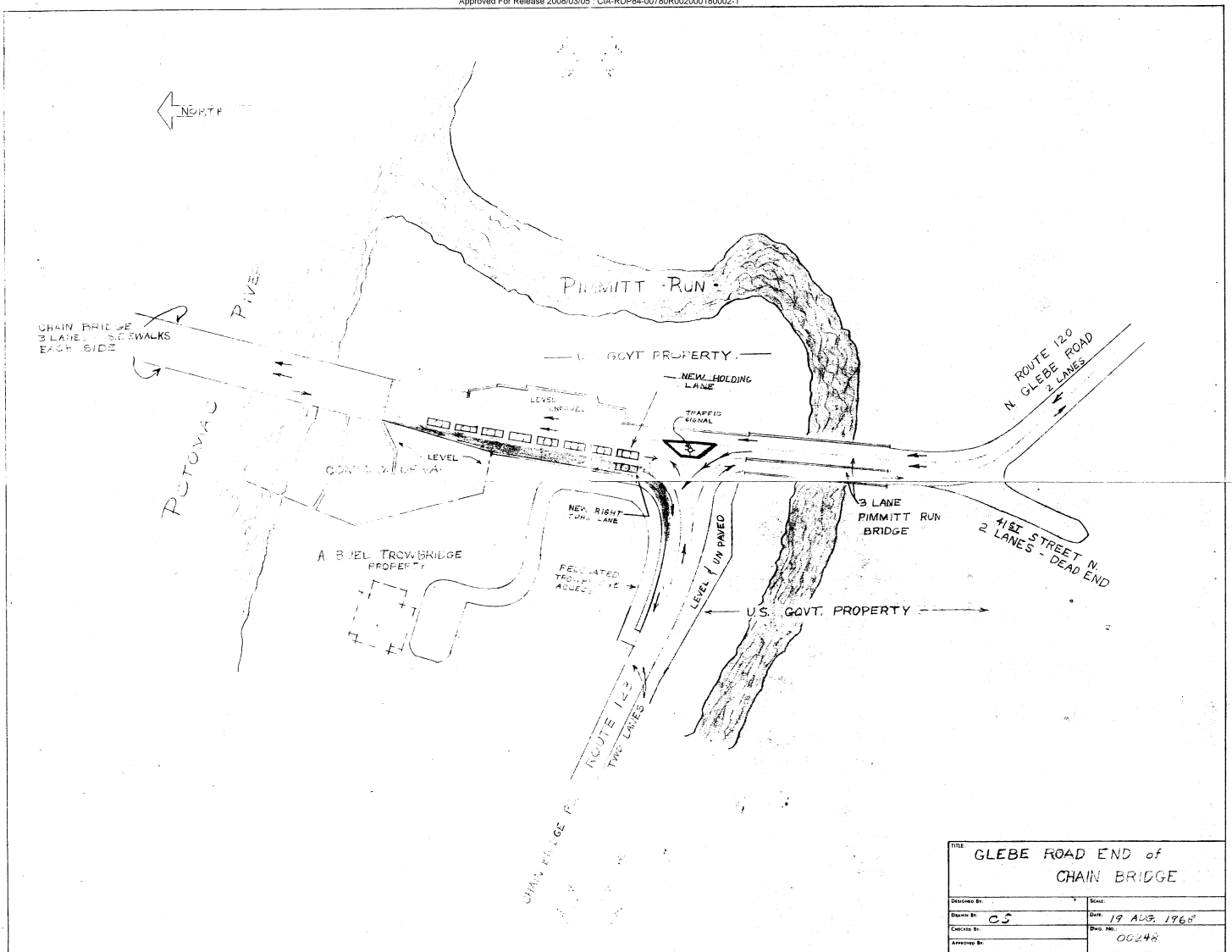


Figure 2 (cont.)